It is undeniable that the research and clinical knowledge base in performing arts medicine continues to develop, as discussed in the June editorial in Medical Problems of Performing Artists. This growth in research is certainly evident in dance, as in other areas of the performing arts. The breadth of the research includes the studies of biomechanics, conditioning and supplementary training practices, injury prevention and rehabilitation, motor control, nutrition, physics, and psychology. In the area of biomechanics alone, an extensive literature review by Krasnow et al. (2011) reported on 89 studies: 62 published in peer-reviewed journals or conference proceedings, 16 conference abstracts, and 11 theses or dissertations. Nine were from the 1970s, 16 from the 1980s, 26 from the 1990s, and 38 from 2000-2009, demonstrating the clear trend in the increasing interest in biomechanics research in dance, and this can be seen in other areas of the dance science and medicine fields.

Although elevation steps in dance have by far been the most studied using biomechanics, other movements of interest have included plié, relevé and élevé, passé, dégagé, développé, rond de jambe, grand battement, and a wide variety of turns. Many of these articles have focused on determining how dancers achieve these movements, using kinematics and electromyography, and how elite dancers differ from novice dancers or nondancers. In this issue, Abraham et al. examine the potential of enhancing élevé performance, in particular range of motion (ROM), by using motor imagery practice (MIP). They found that ROM was improved post-intervention and, additionally, that the participants responded positively to the MIP as a tool for enhancing élevé. This article demonstrates a more recent approach in the research to go beyond describing movement abilities and strategies, and to seek methods to assist dancers in improving their skill sets.

Another area of considerable research in dance has been about turnout, and in particular, how important range of motion is in classical dance and how compensations at the knee and ankle for limited turnout increase injury incidence. It is widely believed that these compensations are responsible for at least some of the injuries in the lower extremities, particularly in classical dancers (Coplan, 2002; Negus et al., 2005). In the study by Washington et al. in this issue, the two aims were 1) to see if there are differences in degree of turnout between the three levels of dancers in a professional classical ballet company, and 2) to establish average values for the ROM of turnout in professional ballet dancers. Their results indicated that hip rotation ROM is similar across all levels of professional dance—i.e., no significant differences were found. As in other studies, they also found that the dancers had on average greater passive hip external rotation range than their active hip external rotation range. It should be noted that to date there is still no one standard of measuring turnout in the dance science and medicine field.

Studies in dance have also suggested the impact of aerobic capacity and anaerobic threshold on dance performance and injury (Angioi et al., 2009; Twitchett et al., 2010). The research suggests that lower levels of fitness contribute to higher incidence of injury, although more research is needed to confirm this hypothesis. In this issue, Wyon et al. sought to ascertain whether there are company rank differences in maximal aerobic capacity and anaerobic threshold in elite classical ballet dancers. In contrast to the Washington et al. study, differences by rank were found in fitness levels. The study involved 74 professional ballet dancers, and statistical analysis reported that soloists have significantly lower VO₂ peak than artists and principal dancers. Additionally, regarding anaerobic threshold, artists have significantly lower %AT than soloists and principals. The authors suggest that differences in VO₂ peak and anaerobic threshold between the ranks in ballet companies are probably due to their different rehearsal and performance demands. This finding might indicate that training regimens need to be altered to enhance the fitness levels of the dancers.

A fourth area of dance science research, dance psychology, is also considered in this September issue. The study by Alimena and Air examined the trust, confidence, and satisfaction that dancers have in physicians, and the part this plays in influencing dancers’ willingness to seek healthcare. Seventy-nine professional and student ballet dancers were surveyed, and results suggest that 1) dancers have greater trust in physiotherapists than medical doctors, 2) students have less trust in MDs than professional dancers, and 3) trust issues may influence dancers’ willingness to seek medical care when injured. This study lends more evidence to the literature that work must be done to enhance the communication and interactions between
dancers and medical practitioners, if dancers are to receive the best possible care for injuries.

Much information has been gained in the past few decades in understanding how dancers achieve what they do and how varying levels and types of dancers differ in physical abilities and skill sets. The clinical practices involving dancers have no doubt benefited from this research and have found ways to adapt and adjust the treatment of dancers to reflect the research findings. Further, many of the top elite training programs have also advanced their teaching methodologies and methods of screening and treating dancers. There is still, however, a gap between the knowledge gained through the research on dancers and a large portion of the training schools and studios. Summer dance programs at studios continue to place dancers into curricula of four and five classes and rehearsals per day, after the dancers have had breaks from dance, with no gradual increase in intensity. Many schools increase rehearsal hours dramatically as performances approach, rather than recognize the benefits of tapering pre-performance. Studies suggest an ongoing lack of proper nutrition for dancers, in spite of educational programs in place. And the practice of forced turnout continues by dancers, despite all that is known about the vulnerability this creates for the lower extremities. Our big challenge, as the research continues to inform our practitioners, directors, and educators, is how to find ways to implement the research findings into the practical world of dance so that our dancers may have more rewarding and extended careers.

Finally, congratulations are due to this year’s winner of the Alice G. Brandfonbrener Young Investigator Award, Matt McCrary. In his study published in this issue, violinists who were experiencing pain symptoms while playing demonstrated different muscle activation patterns, suggesting altered biomechanics. These results can be applied to developing treatment methods, thus improving clinical practices in dealing with injured musicians.

Donna Krasnow, PhD
Assoc. Editor–Dance, MPPA
Los Angeles, California
dkrasnow1@aol.com